




Formation of Earth
4.6. billion years ago

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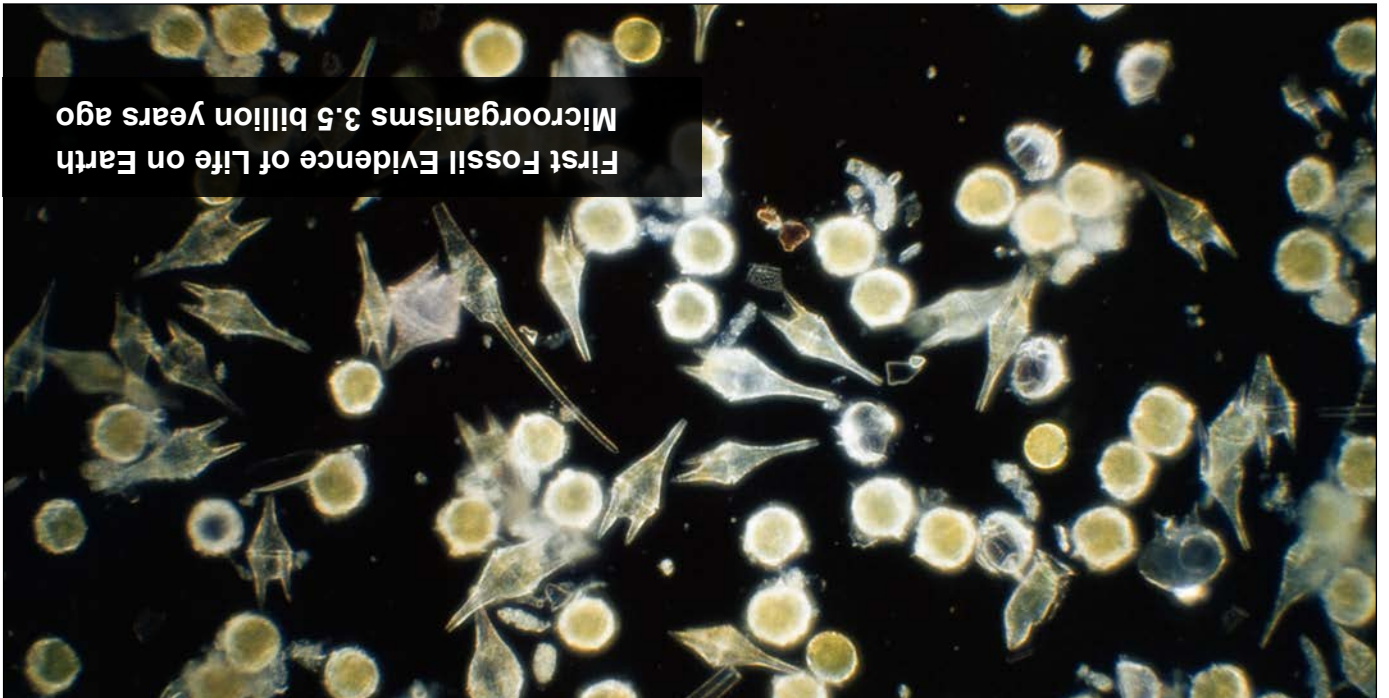
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First Fossil Evidence of Life on Earth
Microorganisms 3.5 billion years ago





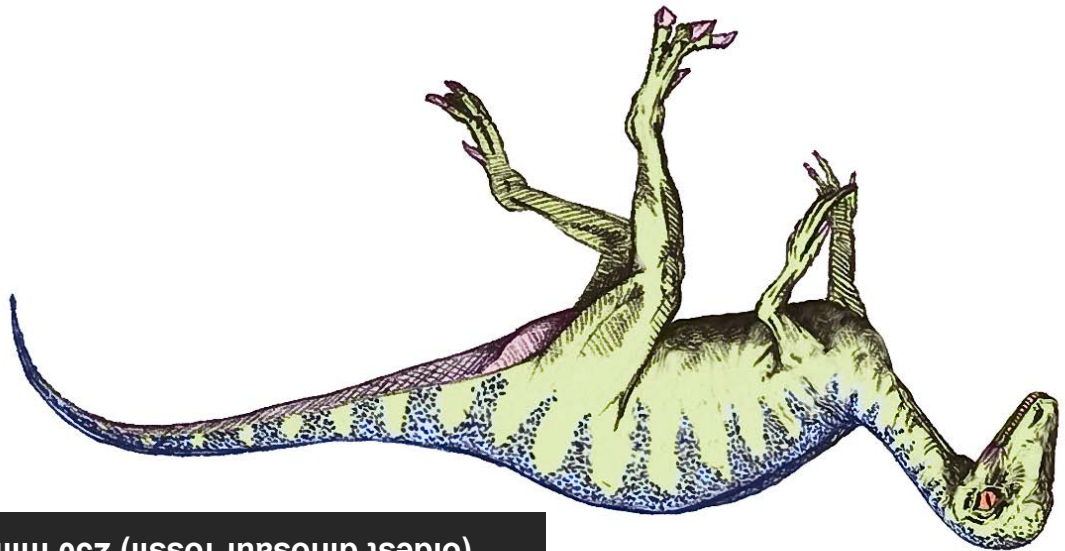
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**First Fossil Evidence of Eoraptor
(oldest dinosaur fossil) 230 million years ago**



**First Fossil Evidence of Archaeopteryx
(ancestor of modern birds) 150 million years ago**

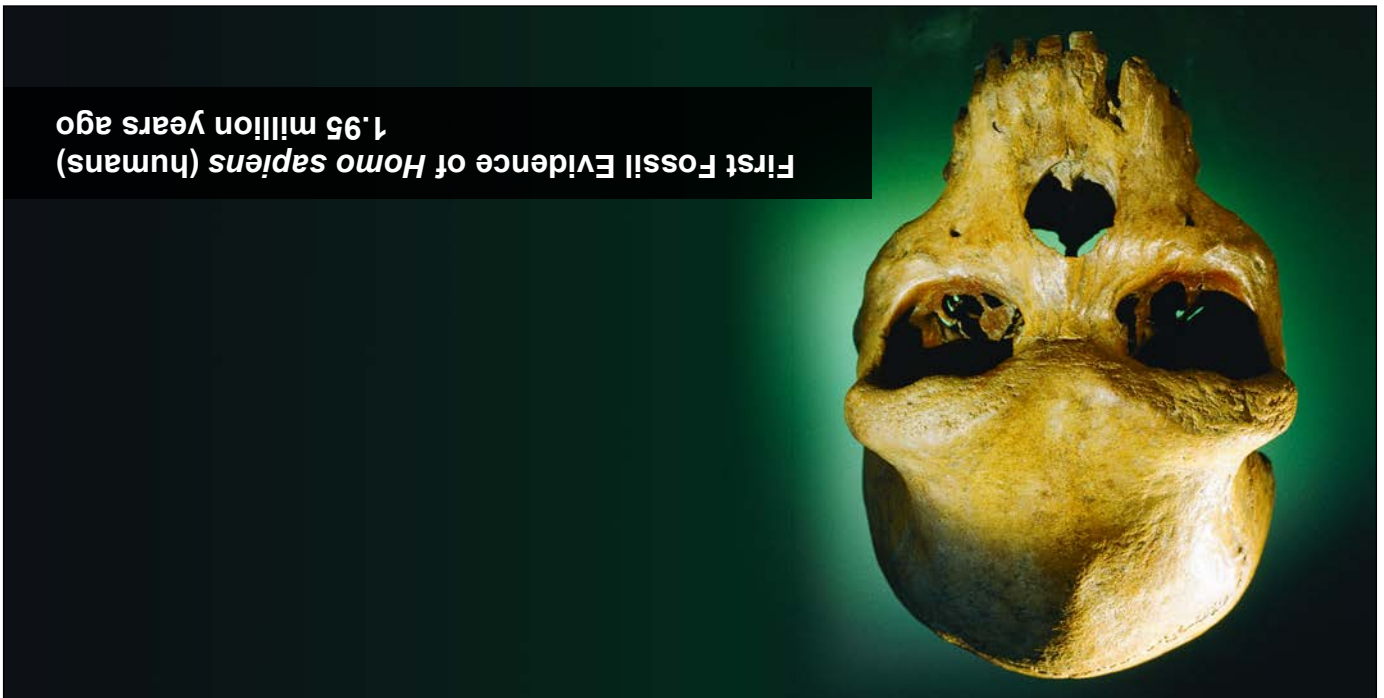
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**First Fossil Evidence of Homo sapiens (humans)
1.95 million years ago**



**Pleistocene epoch 1.8 million years ago–
10,000 years ago**





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Geologic Timeline Labels—Set 2
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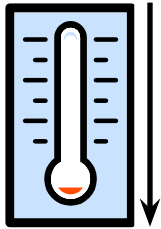
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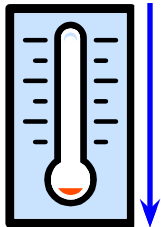
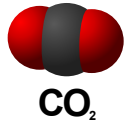


temperature
major drop

Extinction Event

Late Ordovician Period, 443 MYA

carbon dioxide
steady

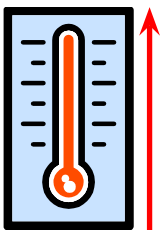
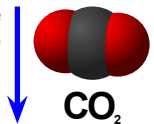


temperature
drop

Extinction Event

Late Devonian Period, 354 MYA

carbon dioxide
major drop

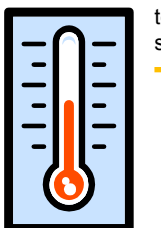
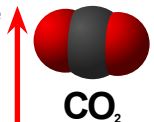


temperature
rising

Extinction Event

Late Permian Period, 248 MYA

carbon dioxide
rising

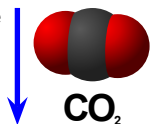


temperature
steady

Extinction Event

Late Triassic Period, 206 MYA

carbon dioxide
dropping





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Geologic Timeline Labels—Set 2
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Extinction: Past and Present


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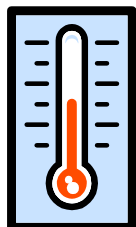
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Information Card

Unit 7.4.g
Extinction: Past and Present

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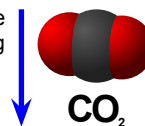
temperature
steady



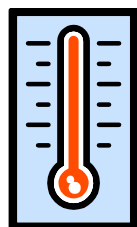
Extinction Event

Late Cretaceous Period, 65 MYA

carbon dioxide
dropping



CO₂

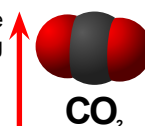


temperature
rising

Extinction Event

Holocene Epoch (present), 0 MYA

carbon dioxide
rising



CO₂

California Freshwater Shrimp

The California freshwater shrimp eats decaying plants and animals. It requires clean fresh water to survive. This shrimp lives in coastal streams in Marin, Sonoma, and Napa counties. These counties are north of San Francisco and contain cities, such as Santa Rosa, San Rafael, and Napa. Many factors have endangered this shrimp. Humans have altered habitat by mining for gravel in the shrimp's streams, harvesting timber along banks, and building farms and dams in these counties. The shrimp are also threatened by nonnative fish species that people have stocked in streams. These fish eat the shrimp. Water pollution poses another threat, since the shrimp require clear, clean water to survive.

Status: endangered



California Golden Trout

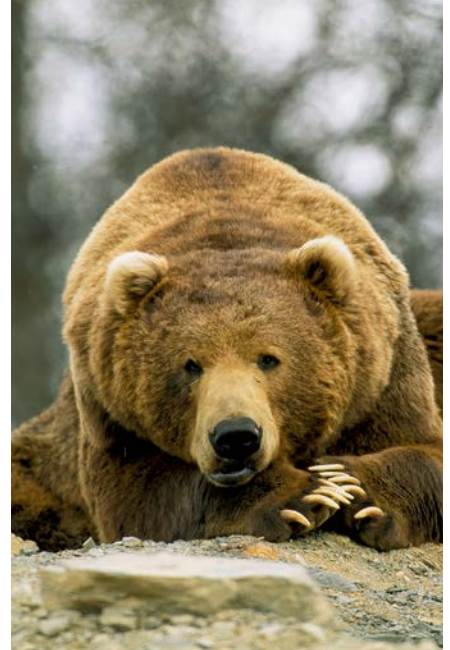
The California golden trout lives in cold, clear mountain streams and pools in Inyo National Forest in the eastern Sierra Nevada mountains. This forest sits next to the town of Mammoth Lakes. The trout feeds on insects and their larvae. People have introduced brown trout and rainbow trout into the golden trout's habitat. The golden trout cannot compete with these other fish for the same food resources. In addition, brown trout often eat golden trout. Cattle ranching has also hurt the California golden trout. When cattle graze in meadows next to streams, they often strip the streams of plants or damage the banks that help hide the golden trout from predators.

Status: threatened. Conservationists are working to get the trout added to the endangered species list.

Grizzly Bear

The grizzly bear lived in hills and mountains throughout California. The grizzly bear eats both plants and animals, but is most famous as a fierce top predator. When large numbers of people came to California during the Gold Rush in 1849, they moved into grizzly bear habitat. People were afraid of the grizzly bear and did not want it to kill their livestock, so they began to hunt the bear. By 1922, fewer than 75 years after the discovery of gold, the last grizzly bear in California was killed. The grizzly bear still lives in North America, mostly in and around Canada, American national parks, and other and protected areas of the United States.

Status: threatened. Removed from the endangered species list in March 2007.



Guadalupe Fur Seal

The Guadalupe fur seal used to live along the coast of California. In the 1800s, fur seal hunters killed most of the 30,000 seals that lived in the ocean. In fact, so many were killed that scientists thought the seals were extinct. Some seals survived, however, and were rediscovered in 1954. Several thousand seals now breed in Mexico and swim off the coast of Southern California. They eat the plentiful squid and mackerel. Noise pollution from the space shuttle program harms the seals. In addition, oil exploration in the ocean disturbs its habitat.

Status: threatened. Conservationists are working to get it added to the endangered species list.

Island Fox

The island fox lives on the Channel Islands off the coast of California. This fox is the largest mammal native to the Channel Islands. It is only about the size of a house cat and eats mostly insects and fruit. It faces a variety of human threats. Golden eagles, which arrived in the islands in 1999, now kill and eat island foxes. Before 1999, bald eagles lived on the islands and scared away the golden eagles. Bald eagles ate fish instead of foxes, so the foxes had no natural predators on the islands. Pollution from DDT, a pesticide humans used in farming, killed off the bald eagle population on the islands. Golden eagles arrived after the bald eagles disappeared. In addition, dogs that humans introduced to the islands have brought diseases that kill some foxes.

Status: endangered. The population has dropped at least 50% since the 1990s. On Santa Cruz Island the population has dropped from 1,300 in 1995 to fewer than 100 today.



Status: endangered. Population has declined 50–90% in the past 150 years.

The salt marsh harvest mouse lives in the marshes of the San Francisco, San Pablo, and Suisun bays in Northern California. This small mouse lives around marsh plants, such as pickleweed and saltgrass. About 84% of the salt marshes around these bays have disappeared since 1850 because humans have converted this land for city buildings, agriculture, and salt production. In addition, people destroy some marshes when they treat wastewater and drain the clean fresh water into the bay. The addition of fresh water makes the marshes less salty, changing the types of plants that can live there. Without the right kinds of plants, the harvest mouse cannot survive. This mouse swims well but needs high land at the marsh's edge so it has a place to go during high tide. People have developed a lot of marshland into houses and city buildings. Nonnative red foxes also prey on the harvest mouse, as do stray cats that live in nearby human developments. These threats are just some of many threats faced by the salt marsh harvest mouse.

Salt Marsh Harvest Mouse



San Joaquin Antelope Squirrel

The San Joaquin antelope squirrel is a small ground squirrel with a stripe on its side. This squirrel eats plants, fungi, seeds, and insects. It lives in the San Joaquin Valley, an area significantly changed by humans in the past century. This squirrel used to live in a range of 3.5 million acres. Now it has only 102,000 acres of available habitat. Humans have altered the rest of this animal's habitat for farming, mining, building roads, and more. More humans continue to move to the San Joaquin Valley every year. Pesticides designed to kill other ground squirrels have also killed the San Joaquin antelope squirrel.

Status: threatened. Conservationists are working to get the squirrel added to the endangered species list.



San Joaquin Kit Fox

The San Joaquin kit fox is the smallest fox in North America. As its name suggests, it lives in the San Joaquin Valley. It eats different species of squirrels and other rodents, as well as birds and insects. The kit fox population has gone down as a result of many human activities. In the 1900s, much of the kit fox habitat was altered for farming and polluted with pesticides. By 1979, more than 93% of the San Joaquin Valley's land had been developed. People continue to move into the San Joaquin Valley. They threaten the kit fox population with their new farms, buildings, and more. In addition, nonnative species, such as the coyote, the red fox, and domestic dogs prey on the kit fox.

Status: threatened. Conservationists are working to get the fox added to the endangered species list.